

ABSTRACT

The shorelines of Albemarle and Pamlico Sounds are dominated by wetlands. Three large reaches of these shorelines were examined on National Wetlands Inventory maps in order to document the wetland type, zonation of vegetation, and geomorphic characteristics of the shoreline. The southern shoreline of Albemarle Sound is 72 percent wetland and 28 percent upland. Only 1 percent of the shoreline of Alligator River is upland, the remainder being wetland. The shoreline of Croatan Sound and northern Pamlico Sound is 87 percent wetland and 13 percent upland. Vegetation structure in these geographic regions varies with salinity of the estuaries: wetlands in Albemarle Sound and the Alligator River are mostly forested, while wetlands in Croatan Sound and northern Pamlico Sound are marshes. The large coverage of forested wetlands hydrologically affected by sea level in North Carolina is unique in estuaries of eastern United States. Consequently, they are among the least studied and most poorly understood wetland ecosystems.

In freshwater areas where forested fringe wetlands dominate, some sites develop a gradient in species composition, vegetation structure, and hydrology that distinguishes shoreline forest stands from interior wetland sites. At one representative site, red maple and red bay increased in importance and bald cypress decreased in importance with distance from the shoreline. The surface of nearshore sediments is elevated slightly above the wetland interior. Microrelief also becomes greater toward the wetland interior. In brackish water areas zonation of vegetation tends to be determined by salinity, with marsh vegetation near the edge grading into shrubs and trees with increasing distance from the shoreline. These "fringe" wetlands are influenced hydrologically by flushing from wind-influenced water level fluctuations in the sounds, local wave activity, and globally rising sea level. The position of fringe wetlands at the interface between aquatic ecosystems and interior wetlands makes them ecologically important habitats. Their position also requires that they be assessed for the linear extent of the resource, rather than the small surface area that they occupy relative to other wetland types. Forested fringe wetlands provide complex habitat features that are dependent on continuous shoreline erosion.

The hydrology of these wetlands is still poorly understood. Wind direction and force control flooding. Consequently, hydroperiod varies according to the geographic position of the wetland in relation to the estuary. The hydrologic data analyzed from the floodplain of the Chowan River illustrated that the site